Having thus described the invention, it is so claimed:

1. A method of encoding data on a metal welding wire including the steps of:

a) moving a welding wire along a path;

b) providing coded information;

c) providing an encoding mechanism along said path to impart the coded information on to said welding wire; and,

d) activating said encoding mechanism to impart said coded information on to said welding wire as said welding wire moves past said encoding mechanism.

2. The method as defined in claim 1, wherein said coded information includes at least one code segment of one of a pulse count, a pulse width, a pulse frequency, a program, a binary value, bar code, visual marking, and combinations thereof.

3. The method as defined in claim 2, wherein said coded information includes magnetic code having a plurality of code segments at least partially in the direction of said path.

4. The method as defined in claim 2, wherein said coded information includes at least one code segment of one of a pulse count, a pulse width, a pulse frequency, a program, a binary value, bar code, and combinations thereof.

5. The method as defined in claim 1, wherein each of the code segments include at least one magnetic pulse having a given pulse width in the direction of said path.

6. The method as defined in claim 4, wherein each of the code segments include at least one magnetic pulse having a given pulse width in the direction of said path.

7. The method as defined in claim 5, wherein said coded information includes a plurality

of magnetic pulses having different pulse widths in the direction of said path.

8. The method as defined in claim 6, wherein said coded information includes a plurality of magnetic pulses having different pulse widths in the direction of said path.

9. The method as defined in claim 1, wherein said coded information includes at least one magnetic pulse having a given frequency.

10. The method as defined in claim 4, wherein said coded information includes at least one magnetic pulse having a given frequency.

11. The method as defined in claim 1, wherein said coded information includes at least one binary code.

12. The method as defined in claim 4, wherein said coded information includes at least one binary code.

13. The method as defined in claim 1, wherein said coded information comprises a first code segment having at least one magnetic pulse in the direction of said path and a second code segment spaced from said first code segment in said direction and having a different number of pulses than said first code segment.

14. The method as defined in claim 6, wherein said coded information comprises a first code segment having at least one magnetic pulse in the direction of said path and a second code segment spaced from said first code segment in said direction and having a different number of pulses than said first code segment.

15. The method as defined in claim 1, wherein said coded information comprises a first

code segment having a magnetic pulse having a first pulse width in the direction of said path and a second code segment spaced from said first code segment in said direction and having a magnetic pulse having a second pulse width different from said first pulse width.

16. The method as defined in claim 8, wherein said coded information comprises a first code segment having a magnetic pulse having a first pulse width in the direction of said path and a second code segment spaced from said first code segment in said direction and having a magnetic pulse having a second pulse width different from said first pulse width.

17. The method as defined in claim 1, wherein said coded information comprises a first code segment having a magnetic pulse having a first frequency and a second code segment spaced from said first code segment in the direction of said path and having a magnetic pulse having a second frequency different from said first frequency.

18. The method as defined in claim 10, wherein said coded information comprises a first code segment having a magnetic pulse having a first frequency and a second code segment spaced from said first code segment in the direction of said path and having a magnetic pulse having a second frequency different from said first frequency.

19. The method as defined in claim 1, wherein said coded information comprises first and second binary code segments spaced apart in the direction of said path and having different binary values with respect to one another.

20. The method as defined in claim 12, wherein said coded information comprises first and second binary code segments spaced apart in the direction of said path and having different binary values with respect to one another.

21. The method as defined in claim 1, wherein said coded information includes a

program.

22. The method as defined in claim 4, wherein said coded information includes a program.

23. The method as defined in claim 1, wherein said coded information includes welding parameter information, welding wire information, and combinations thereof.

24. The method as defined in claim 2, wherein said coded information includes welding parameter information, welding wire information, and combinations thereof.

25. The method as defined in claim 4, wherein said coded information includes welding parameter information, welding wire information, and combinations thereof.

26. The method as defined in claim 7, wherein said coded information includes welding parameter information, welding wire information, and combinations thereof.

27. The method as defined in claim 18, wherein said coded information includes welding parameter information, welding wire information, and combinations thereof.

28. The method as defined in claim 20, wherein said coded information includes welding parameter information, welding wire information, and combinations thereof.

29. The method as defined in claim 16, wherein said coded information includes welding parameter information, welding wire information, and combinations thereof.

30. The method as defined in claim 23, wherein said welding wire information includes variations in cross-sectional size of the wire, surface conditions of the wire, breaks in the wire,

change in wire composition, twist in the wire, natural curvature of the wire, end of wire indicator, amount of wire remaining on reel or in canister, wire manufacturer's name, wire manufacturer's location, wire designation, specified wire cross-section shape, specified wire size, wire composition, designated wire feed rate, flux composition in wire, type of wire reel or wire container, date of wire manufacture, at least one welding parameter, type or welder, and combinations thereof.

31. The method as defined in claim 24, wherein said welding wire information includes variations in cross-sectional size of the wire, surface conditions of the wire, breaks in the wire, change in wire composition, twist in the wire, natural curvature of the wire, end of wire indicator, amount of wire remaining on reel or in canister, wire manufacturer's name, wire manufacturer's location, wire designation, specified wire cross-section shape, specified wire size, wire composition, designated wire feed rate, flux composition in wire, type of wire reel or wire container, date of wire manufacture, at least one welding parameter, type or welder, and combinations thereof.

32. The method as defined in claim 29, wherein said welding wire information includes variations in cross-sectional size of the wire, surface conditions of the wire, breaks in the wire, change in wire composition, twist in the wire, natural curvature of the wire, end of wire indicator, amount of wire remaining on reel or in canister, wire manufacturer's name, wire manufacturer's location, wire designation, specified wire cross-section shape, specified wire size, wire composition, designated wire feed rate, flux composition in wire, type of wire reel or wire container, date of wire manufacture, at least one welding parameter, type or welder, and combinations thereof.

33. The method as defined in claim 25, wherein said welding wire information includes variations in cross-sectional size of the wire, surface conditions of the wire, breaks in the wire, change in wire composition, twist in the wire, natural curvature of the wire, end of wire indicator, amount of wire remaining on reel or in canister, wire manufacturer's name, wire manufacturer's location, wire designation, specified wire cross-section shape, specified wire size, wire composition, designated wire feed rate, flux composition in wire, type of wire reel or wire container, date of wire

manufacture, at least one welding parameter, type or welder, and combinations thereof.

34. The method as defined in claim 1, wherein said coded information is correlated to an area of or position on said welding wire.

35. The method as defined in claim 4, wherein said coded information is correlated to an area of or position on said welding wire.

36. The method as defined in claim 2, wherein said coded information is correlated to an area of or position on said welding wire.

37. The method as defined in claim 31, wherein said coded information is correlated to an area of or position on said welding wire.

38. The method as defined in claim 32, wherein said coded information is correlated to an area of or position on said welding wire.

39. The method as defined in claim 33, wherein said coded information is correlated to an area of or position on said welding wire.

40. A method of controlling an electric arc welding process having a plurality of operating conditions and wherein a welding wire is advanced toward a workpiece and a welding arc is established between the advancing welding wire and the workpiece, including the steps of:

a) scanning a welding accessory for coded information on said welding accessory; and,

b) monitoring, controlling and/or selecting at least one of the plurality of operating conditions in response to said coded information obtained from said welding accessory.

41. The method as defined in claim 40, wherein said welding accessory includes said

welding wire, a wire reel, a shielding gas, a shielding gas container, and combinations thereof.

42. The method as defined in claim 40, wherein said coded information includes at least one code segment at least partially in the form of a pulse count, a pulse width, a pulse frequency, a program, a binary value, a bar code, a visual marker, a RFID component, an IC component, a Touch Memory component, and combinations thereof.

43. The method as defined in claim 41, wherein said coded information includes at least one code segment at least partially in the form of a pulse count, a pulse width, a pulse frequency, a program, a binary value, a bar code, a visual marker, a RFID component, an IC component, a Touch Memory component, and combinations thereof.

44. The method as defined in claim 40, wherein said coded information includes variations in cross-sectional size of the wire, surface conditions of the wire, breaks in the wire, change in wire composition, twist in the wire, natural curvature of the wire, end of wire indicator, amount of wire remaining on reel or in canister, wire manufacturer's name, wire manufacturer's location, wire designation, specified wire cross-section shape, specified wire size, wire composition, designated wire feed rate, flux composition in wire, type of wire reel or wire container, at least one welding parameter, type of welder, date of wire manufacture, gas type, gas pressure, designated gas flow rate, gas manufacturer, canister filling date, canister filling location, canister volume, canister type, gas volume, at least one welding parameter, type of welder, low gas indication threshold, and combinations thereof.

45. The method as defined in claim 42, wherein said coded information includes variations in cross-sectional size of the wire, surface conditions of the wire, breaks in the wire, change in wire composition, twist in the wire, natural curvature of the wire, end of wire indicator, amount of wire remaining on reel or in canister, wire manufacturer's name, wire manufacturer's location, wire designation, specified wire cross-section shape, specified wire size, wire composition,

designated wire feed rate, flux composition in wire, type of wire reel or wire container, at least one welding parameter, type of welder, date of wire manufacture, gas type, gas pressure, designated gas flow rate, gas manufacturer, canister filling date, canister filling location, canister volume, canister type, gas volume, at least one welding parameter, type of welder, low gas indication threshold, and combinations thereof.

46. The method as defined in claim 43, wherein said coded information includes variations in cross-sectional size of the wire, surface conditions of the wire, breaks in the wire, change in wire composition, twist in the wire, natural curvature of the wire, end of wire indicator, amount of wire remaining on reel or in canister, wire manufacturer's name, wire manufacturer's location, wire designation, specified wire cross-section shape, specified wire size, wire composition, designated wire feed rate, flux composition in wire, type of wire reel or wire container, at least one welding parameter, type of welder, date of wire manufacture, gas type, gas pressure, designated gas flow rate, gas manufacturer, canister filling date, canister filling location, canister volume, canister type, gas volume, at least one welding parameter, type of welder, low gas indication threshold, and combinations thereof.

47. The method as defined in claim 46, including the step of imparting said coded information on said welding wire.

48. The method as defined in claim 46, including the step of imparting said coded information on said welding wire.

49. The method as defined in claim 47, wherein said coded information is at least partially magnetically imparted on the welding wire.

50. The method as defined in claim 48, wherein said coded information is at least partially magnetically imparted on the welding wire.

51. The method as defined in claim 40, including the further steps of comparing the obtained information with preselected information; and, selecting, monitoring, and/or controlling said at least one operating condition based on said comparison.

52. The method as defined in claim 50, including the further steps of comparing the obtained information with preselected information; and, selecting, monitoring, and/or controlling said at least one operating condition based on said comparison.

53. The method as defined in claim 40, wherein said coded information is at least partially on a component positioned on a container for said welding wire; and, scanning the component on said container to obtain information therefrom pertaining to said welding wire.

54. The method as defined in claim 50, wherein said coded information is at least partially on a component positioned on a container for said welding wire; and, scanning the component on said container to obtain information therefrom pertaining to said welding wire.

55. The method as defined in claim 52, wherein said coded information is at least partially on a component positioned on a container for said welding wire; and, scanning the component on said container to obtain information therefrom pertaining to said welding wire.

56. The method as defined in claim 40, wherein said coded information is at least partially on a component positioned on a container for said shielding gas; and, scanning the component on said container to obtain information therefrom pertaining to said shielding gas.

57. The method as defined in claim 50, wherein said coded information is at least partially on a component positioned on a container for said shielding gas; and, scanning the component on said container to obtain information therefrom pertaining to said shielding gas.

58. The method as defined in claim 50, wherein said coded information is at least partially on a component positioned on a container for said shielding gas; and, scanning the component on said container to obtain information therefrom pertaining to said shielding gas.

59. The method as defined in claim 55, wherein said coded information is at least partially on a component positioned on a container for said shielding gas; and, scanning the component on said container to obtain information therefrom pertaining to said shielding gas.

60. A system for controlling an electric arc welding process wherein a welding wire is advanced toward a workpiece and a welding arc is established between the advancing wire and the workpiece comprising a stored source of coded information on a welding accessory, a scanner to scan the coded information and output a signal indicative of said coded information, and a control mechanism to monitor, select and/or control the operation of the welding process in accordance with said signal.

61. The system as defined in claim 60, wherein said coded information includes variations in cross-sectional size of the wire, surface conditions of the wire, breaks in the wire, change in wire composition, twist in the wire, natural curvature of the wire, end of wire indicator, amount of wire remaining on reel or in canister, wire manufacturer's name, wire manufacturer's location, wire designation, specified wire cross-section shape, specified wire size, wire composition, designated wire feed rate, flux composition in wire, type of wire reel or wire container, at least one welding parameter, type of welder, date of wire manufacture, gas type, gas pressure, designated gas flow rate, gas manufacturer, canister filling date, canister filling location, canister volume, canister type, gas volume, at least one welding parameter, type of welder, low gas indication threshold, and combinations thereof.

62. The system as defined in claim 60, wherein said coded information includes code segments and the outputted signal is representative of at least one code segment, and a decoder to

receive and decode at least one code segment.

63. The system as defined in claim 61, wherein said coded information includes code segments and the outputted signal is representative of at least one code segment, and a decoder to receive and decode at least one code segment.

64. The system as defined in claim 62, wherein said welding apparatus has a plurality of operating parameters, said at least one code segment including information pertaining to at least one of said parameters, said decoder outputting a control signal to said control mechanism indicative of said information pertaining to said at least one parameter.

65. The system as defined in claim 63, wherein said welding apparatus has a plurality of operating parameters, said at least one code segment including information pertaining to at least one of said parameters, said decoder outputting a control signal to said control mechanism indicative of said information pertaining to said at least one parameter.

66. The system as defined in claim 62, wherein said coded information includes at least one code segment at least partially in the form of a pulse count, a pulse width, a pulse frequency, a program, a binary value, a bar code, a RFID component, an IC component, a semi-conductor memory component, a Touch Memory component, and combinations thereof.

67. The system as defined in claim 64, wherein said coded information includes at least one code segment at least partially in the form of a pulse count, a pulse width, a pulse frequency, a program, a binary value, a bar code, a RFID component, an IC component, a semi-conductor memory component, a Touch Memory component, and combinations thereof.

68. The system as defined in claim 65, wherein said coded information includes at least one code segment at least partially in the form of a pulse count, a pulse width, a pulse frequency, a

program, a binary value, a bar code, a RFID component, an IC component, a semi-conductor memory component, a Touch Memory component, and combinations thereof.

69. The system as defined in claim 60, wherein said welding accessory includes a welding wire, a wire reel, a shielding gas, a shielding gas container, and combinations thereof.

70. The system as defined in claim 66, wherein said welding accessory includes a welding wire, a wire reel, a shielding gas, a shielding gas container, and combinations thereof.

71. The system as defined in claim 67, wherein said welding accessory includes a welding wire, a wire reel, a shielding gas, a shielding gas container, and combinations thereof.

72. The system as defined in claim 68, wherein said welding accessory includes a welding wire, a wire reel, a shielding gas, a shielding gas container, and combinations thereof.

73. A welder for performing a welding process, said welder comprising a feeder for directing welding wire toward a workpiece from a supply of welding wire in a container, said welding wire including coded information related to the end of the wire in the container, a code reader to detect said coded information, and an indicator that indicates that said container is nearly empty of said wire.

74. The welder as defined in claim 73, wherein said indicator is a visual indicator or an audible indicator.

75. The welder as defined in claim 73, wherein said indicator upon detecting said coded information causes said welder to terminate operation.

76. The welder as defined in claim 74, wherein said indicator upon detecting said coded

information causes said welder to terminate operation.